June 1985 The Naval Aviation Safety Review U.S. NAVY

Trans

approach

The University of Michigan Transportation Library

THE UNIVERSITY OF MICHIGAN
JUL 8 - 1985
ENGINEERING LIBRARY

UNIVERSITY OF MICHIGAN LIBRARIES
JUN 17 1985
DEPOSITED BY THE UNITED STATES OF AMERICA

The Safety Center at a Glance

Part III: Aeromedical Division. As we have progressed from the days of "aeroplanes" to supersonic jet aircraft, physical and physiological stresses on the aircrew have dramatically increased. As emergency escape has evolved from "land aircraft, exit and run" to sophisticated emergency escape systems, the physical limitations of the human body have been pushed to their limits. As maintenance methods have improved and more reliable systems were installed in aircraft, the human factors in aircraft accidents became more prominent. The adaptable Homo sapien was frequently the hero in overcoming insurmountable aircraft mechanical difficulties. And sometimes he was the cause and/or contributor to the demise of the aircraft — and himself.

Looking at the human side of aircraft hazards and mishaps is the job of the Aeromedical Division of the Naval Safety Center. The staff consists of three military and four civilian personnel and is currently headed by Capt. R.J. Coyle, MC, USN (flight surgeon). He is assisted by another flight surgeon, an aerospace physiologist, a civilian aviation psychologist and an escape systems analyst.

The Aeromedical Division reviews and analyzes mishap reports, hazard reports and flight surgeon reports. It also conducts research based upon these reports, occasionally supplemented by questionnaires. As such, the Aeromedical Division has become a prime source for information relating to aeromedical safety in the fields of medicine, physiology, psychology and emergency escape and survival. Aeromedical/emergency escape/survival data is routinely provided to fleet, aeromedical and DoD personnel. As a byproduct, the Aeromedical Division is responsible for the production of the annual U.S. Navy Emergency Escape Summary and the periodic Flight Surgeon's Newsletter.

The staff of the Aeromedical Division actively reaches out to flight crews — through published articles, briefings, surveys and as guest lecturers. They are also actively involved in a variety of professional organizations and military committees and panels — all relating to aviation safety, protection and survival of aircrew.

Personnel of the Aeromedical Division are available for consultation. Give them a call at Autovon 564-7341 if you have any question regarding human factors, aeromedical safety, flight surgeon reports, physiological episodes, use of protective survival or life support equipment, or emergency escape.

THE UNIVERSITY OF MICHIGAN
JUL 8 - 1985
ENGINEERING LIBRARY

approach

Vol. 30 No. 11

HM-12 CH-53E on a training mission. Photo by Peter Mersky.

FEATURES

Confessions of a Hot and Tired Pilot 2
By Cdr. Richard P. Shipman. Naval aviator details mishap aftermath to retain flight status.

A Few Words on the Word "Safety" 7
By Cdr. Tom Johnson. What does "safety" stand for anyway?

Nunzio's Guide for Easy Living 8
By Cdr. J.R. Sanders and Lt. Tom "Nunzio" Clarke. Here are 36 rules on how to survive in the carrier environment.

Cabin Fires 10
By Lt. Bill Bellinger. The best solution is prevention, but knowing survival techniques is next best.

Healthy Weight Gain 11
By Lt. J.T. Reres. Drink plenty of water and add key items to your survival packet.

Let Me Make It Perfectly Clear . . . 12
By Lcdr. Franklin Jones. Communications breakdown may cause a runway incident or near miss.

Planning for Scan Regression 14
By Lcdr. G.R. Murchison. Seeing the "whole picture" maintains your "situational awareness."

Squeaking by a Sandstorm 16
By Lt. Nels A. Frostenson. A CV landing in fog can be a delicate, scary flight operation.

Fuel "Famine" 18
By Bud Baer. An "empty tank" is frequently caused by an "empty head."

A Collection 22
By Lcdr. Steve Duffy. A safety officer has many ways to motivate others to think and act safely.

WESTPAC Wahoo 24
By Lcdr. D.P. Dudek. A pilot faces a potential disaster after many landing delays.

Relief Tube Hardover 26
By Ltjg. Donald K. Strother, USCG. Helo pilot has his hands full when relief tube malfunctions.

Jumping Out of a Perfectly Good Airplane 27
By Lt. John Flynn. Parachute jump school will give you confidence if you ever have to eject.

A Hair-Raising Experience 30
By Lt. Col. Louis B. Stefan, USMCR. A student controller almost compromises a safe landing.

DEPARTMENTS

Air Breaks 6
Letters 32

Commodore Jerry C. Breast, Commander, Naval Safety Center
Capt. J.P. Smith, Chief of Staff
Capt. E.K. Andrews, Director, Aviation Safety Programs
Cdr. C.E. McCaskill, Head, Safety Publications
Lt. John M. Flynn, Editor

Approach is a monthly publication published by the Commander, Naval Safety Center. Address comments, contributions and questions about distribution and reprints to:

Commander, Naval Safety Center
Attention: Approach — Code 71
NAS Norfolk, VA 23511-5796
Telephone: Commercial (804) 444-1321; Autovon 564-1321; FTS 954-1322

Library of Contress Catalog No. 57 60020. ISSN 0570-4979. The contents should not be considered directives and may not be construed as incriminating under Art. 31 of the Uniform Code of Military Justice. Views expressed in guest-written articles are not necessarily those of the Naval Safety Center. The Secretary of the Navy has determined that this publication is necessary in the transaction of business required by law. It is funded and printed in accordance with all Navy publications and printing regulations. Requestor publications postage paid at Norfolk, Va., and additional entry officer. Approach is available for sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

"I raised my hand to give the advance power signal. That was the last thing I remembered."

Confessions of a Hot and Tired Aviator

By Cdr. Richard P. Shipman

HAVE you ever come close to dying in an airplane? I did. Even though the episode occurred over 13 years ago, the memories are vivid. And the potential for what could have happened is still just as scary.

I was an advanced jet instructor at Kingsville at the time. It was a hot August Texas day. As hot as only southern Texas can be hot; heat shimmering off the runway in visible waves, a bright sun, unbroken by any clouds beating down on the barren earth, mangy, half-breed dogs lying by the side of the road with their tongues out, panting. As I drove to work that morning, I wished I could've found relief from the heat by panting.

It had been a long and tiring two weeks leading up to this day. The tempo of the training program — always fast — had been accelerated due to a carrier qualification (CARQUAL) detachment, good weather and a push to catch up on "x's" — student sortie completions. Consequently, I had flown at least twice each day for the past week with some additional "good deals" thrown in such as the ship-to-shore radio watch in conjunction with the CARQUAL in progress. I was tired.

I figured that at least part of my fatigue was due to some other factors that had just occurred. I had just returned to flight status after a bout with the flu. My wife had recently given birth and her parents were down visiting to help. As a result, I was sleeping on our less than comfortable all-vinyl sofa (what else could a young lieutenant afford in those days?). As most parents know, uninterrupted sleep becomes a thing of the past with a new baby. I hadn't had one good night's sleep since the baby was born. To make matters worse, each time I woke up, I was drenched with sweat caused mainly by the vinyl couch: the air conditioner was working full time, but like us humans, it couldn't hack the Texas heat.

The day prior to my incident I flew a routine night flight. After the flight, I stopped at the club for a few beers and to participate in the boat party for the recently carrier-qualified students. How many beers did I have? Who counts? But four or five would be in the ballpark. At any rate, I was home by 2330 and didn't have a brief until 0830 the next day, so I was well within the NATOPS time limitations for alcohol consumption.*

*This incident occurred during the "old days" when the rule was 12 hours "bottle to throttle." As we all know, it is now 12 hours "bottle to brief."

I woke up around 0700 on the next day after another less than great night's sleep. I didn't want to disturb my wife, who was finally getting a little sleep after caring for the baby all night, so I foraged breakfast for myself. The best I could do was some corn pops. As I was eating breakfast, I had the first of several very peculiar feelings that I would experience that day. The feeling was hard to describe, but it was a sort of a loss of concentration, a light-headed feeling. I felt sure it would go away as the morning went on.

Driving to work, I had that momentary feeling again. It crossed my mind to cancel the flight, but then someone else would have had to take the sortie, or my student would have fallen behind. I didn't want to be considered a non-hacker or a sniveler. Besides, I couldn't put my finger on what was wrong.

The flight I was scheduled for was to lead a two-plane tactical formation flight. It was a good deal because you were in the airplane by yourself and could actually fly it for a change. The brief started on time, after a normal naval aviator's snack of several doughnuts and coffee. Several times during the brief, the strange feeling hit me again, causing me to lose my concentration and train of thought. Again, it passed after a few minutes. I was hoping that some 100 percent oxygen would clear things up once I got into the airplane.

Even though it was only mid-morning when we walked to the aircraft, the heat was already rising in waves off the mat. By the time I finished preflighting and strapping in, I was drenched with sweat. Even breathing 100 percent oxygen on the taxi out didn't prevent another one of those strange feelings. But by now I was committed to the flight.

We were cleared to position and hold on the duty runway for a section takeoff. Reluctantly, I closed the canopy and the temperature immediately jumped some more. Once we received takeoff clearance, I glanced over to my wingman on the right side of the runway and raised my hand to give him the advance power signal. That was the last thing I remembered.

My next recollection was a dream-like, surrealistic state of confusion. I was aware of hands tugging at my restraint straps and people pulling me out of the airplane. As I gained more awareness, I realized that the Skyhawk was off the side of the runway in some tall weeds, and it was the crash crew that was pulling me out. The TA-4, still at idle power when I

passed out, had taxied off the runway and come to a stop with no damage. The ready room wags later commented that it was a good thing my wingman wasn't a Marine or he probably would have followed me off the runway into the weeds.

I was taken to the base dispensary, where I was given a saline solution and ordered to rest in an air-conditioned room. When I related the events of the previous week to the flight surgeon, he gave me a grounding chit for two days rest and let me go home.

Two days later, feeling fine and rested, I returned to the dispensary for a complete physical. No problems were noted, I was given an up chit and returned to the flight schedule. The flight surgeon diagnosed the episode as extreme heat exhaustion, fatigue and post-flu weakness. I concurred completely. As I walked out to my aircraft that afternoon, I thought the whole episode was behind me. Little did I know of the horror show that was about to begin.

Just as I was getting into my aircraft, I saw the squadron CO running out to talk to me. He informed me that the admiral in charge of advanced training had read the message the squadron put out about the incident and had ordered me grounded until a positive cause of the physiological episode could be determined. Apparently, the physical exam by the local flight surgeon was not sufficient for the admiral.

Consequently, I went to the naval hospital at Corpus Christi for another physical examination, including an EEG (brain wave test). Again, no discrepancies were found, but the admiral was adamant that I was not to fly again until something definitive was found. My squadron flight surgeon came up with the idea of sending me to the Special Board of Flight Surgeons at Pensacola, Fla., for an intensive series of tests by specialists. If no discrepancies were found in this process, the flight surgeon reasoned, the admiral had sufficient proof that there was nothing physically wrong with me.

The Special Board of Flight Surgeons was an experience I hope no one else has to go through. For a solid week, specialists in every area of medicine probed, stuck, felt and tested me in every way possible. No problems whatsoever were encountered until I went to the neurologist. I had another EEG, and the doctor felt that some of the spikes on the printout were irregular, so he wanted to do some more testing. The additional testing turned out to be an angiogram, a particularly unpleasant procedure where a dye is injected into the carotoid artery of the neck and then x-rays taken of the brain as the dye circulates through. Signing a paper releasing the Navy from liability in the event of my death during this test didn't build my confidence level any.

"For a solid week, specialists in every area of medicine probed, stuck, felt and tested me in every way possible."

The result of the test was a fuzzy x-ray which looked to me to be barely enough in focus to determine anything. But I sure as heck wasn't going to repeat the procedure for a sharper picture. The neurologist, however, felt that he saw a discrepancy in the x-ray which revealed a malformation of the blood vessels in the brain. It was his opinion that I should have brain surgery and that I would never fly again! Talk about ways to ruin your day.

I wanted a second opinion, so I was shipped off to the naval hospital at Bethesda, Md., for more testing. To make a long story short, I went through a month of testing there with no discrepancies found, and an opinion by the chief of neurology was that the x-ray I had in Pensacola did *not* reveal a blood vessel malformation. Apparently, there's as much subjective judgment in medicine as there is on the LSO platform.

With great relief, I returned to Pensacola for the final ruling of the special board, confident that the Bethesda workup would enable me to return to flight status. Imagine my chagrin when the original neurologist stuck to his first opinion that something was wrong, and he was going to recommend to the board that I be medically discharged from the Navy!

The final meeting of the Board of Flight Surgeons was somewhat like a court proceeding. The doctor "against me" presented the information as he saw it with the recommendation that I be removed from flight status and given a medical discharge from the Navy. Another doctor "for me" pointed out the dissenting opinions of the Bethesda doctor and recommended that I be retained on flight status. Finally, I the "defendant" was allowed to speak on my own behalf.

To say I was nervous would be an understatement. My precious hard-earned wings of gold were on the line with any hope of a naval career or any chance of a civilian flying job, should I leave the Navy. I gave an emotional plea to the board, pointing out the significance of their action based on the lack of evidence and the solitary nature of the blackout episode.

A compromise was struck. I was not removed from flight status, but was placed in Service Group 3 for a year, which required that I fly with another designated aviator at all times. After the year, I was to be re-evaluated, and if there were no problems, I would be returned to full flight status.

The year passed uneventfully with no problems. At the end of the probationary period, I traveled to Washington, D.C. for another physical and was given a clean bill of

"It was his opinion that I should have brain surgery and never fly again!"

health. Almost a year and a half after the incident occurred, the nightmare was finally behind me.

Were there lessons to be learned from this? You bet! In retrospect, I realized that I had ample warning that something was wrong with my physical health, yet I chose to disregard those warnings. In doing so, I jeopardized my entire career and future in aviation, not to mention risking my life and the lives of people on the ground if I had blacked out 10 seconds later. Some other lessons learned:

- There is a lot of pressure in the Navy not to take yourself off the flight schedule even if you are sick. The pressure comes from peers, occasionally from the command, but mostly from ourselves. Being a "hacker" with a "can-do" attitude and a non-sniveler are all part of "the right stuff." But, consider the risks when you fly at less than full health.
- Remember the "life change points" scale that measures occurrences in your life that produce stress and statistically increase your probability of an accident? I was well into that danger area when my incident occurred; another warning flag against flying.
- Flight surgeons for years have been harping about the importance of a good breakfast. A bowl of corn pops, three glazed donuts and four cups of coffee was hardly an "eat to win" breakfast. Perhaps nothing more than a good, nutritious breakfast would have prevented the whole incident.
- Alcohol is a dehydrating agent that aggravates a weak and tired condition. Sometimes the NATOPS minimum between drinking and flying may not be sufficient. I would have been a lot better off getting some extra sleep rather than spending time in the club the night before the incident.

The final medical determination for the cause of the mishap was a "single synocopal episode of unknown etiology." I don't know what that means either, but I do know the cause: heat exhaustion, dehydration, fatigue, weakness from the flu, poor diet and bad judgment. I have wondered to this day if the blast of cool air that would have come when I advanced the throttle for takeoff would have prevented the blackout, or did I really avert death by a matter of seconds. Obviously, I'll never know. I do know that I learned a lot from that episode and never again pushed my physical limits. I subsequently completed 10 years of active duty and eight years of reserve flying without an incident. Do me a favor: Learn from my mistake and don't risk a lot of important things for a not so important flight.

Cdr. Shipman is a reservist with Volunteer Training Unit 8686 at NAS Norfolk, Va., currently on special assignment to Approach. On active duty, he served tours as an A-4 instructor, a fleet A-7 pilot and as an assistant flight deck officer. He was the editor of Approach from January 1975 to January 1977 after which he became a civilian writer for the magazine. Cdr. Shipman later worked as an aircraft accident investigator for the National Transportation Safety Board. He is currently a 727 pilot for People Express Airlines.

AIR BREAKS

No Oil Skyhawk. Following a routine dissimilar air combat maneuvering (DACM) sortie, the A-4 pilot declared bingo fuel and headed toward NAS West Coast. Thirty seconds later, his 20 percent oil quantity light lit up. He immediately set engine rpm at 81 percent, checked his other engine instruments and turned toward an alternate field, 70 nm to the south. Oil pressure was normal but rapidly decaying to zero pressure. The pilot reviewed NATOPS procedures with his wingman and prepared himself for possible ejection.

The crippled Skyhawk flew for nearly 10 minutes with zero oil pressure to reach his divert field. After a straight-in precautionary approach and uneventful landing, investigation revealed a failed banjo fitting to the engine oil drain line had caused a complete loss of engine oil.

Lt. Garry R. White of VA-127 did a fine job of bringing his stricken aircraft back, continuing to operate with cool professionalism while under pressure. — Ed.

Down the Relief Tube. The weather was quasi-VFR as the A-6 crew launched on a low-level mission, followed by practice bombing at a target complex. The forecasters predicted improving conditions with a possibility of 2,000 and 5. An hour and half later, the mission was completed and the crew headed for home. Checking the weather at their base, they found the conditions had deteriorated to 1,500 and 3. Requesting touch and go's, they were told that the field was only accepting IFR approaches, even though the area was VFR. Although there was a "sucker hole" over the field, the approach corridors were IFR. We'll let the pilot take up the story.

"We had enough gas for three or four approaches, so we decided to start with some ACLS work. 'Unable,' was the reply from the controller. We would have to settle for some GCAs. After flying three vectors to Timbuktu and back, my B/N and I were beginning to wonder if the controllers were 'losing the bubble.' This was one of those days where the controllers were saturated with too many airplanes requiring IFR handling. Research had shown this time — 1200 local — to be the busiest for this east coast NAS.

"Our fuel situation was slowly beginning to deteriorate and our plan for multiple approaches went down the relief tube as we concentrated on landing on the first pass. At 300 feet we broke out with the runway in sight. On the landing rollout, I glanced at the fuel gauge. We were only 200 pounds above bingo!

"In retrospect, most carrier aviators tend to take landing at the field for granted. Landing on a two-mile long runway just doesn't create the 'pucker effect' that the boat does. Yet, a large percentage of naval aviation mishaps occur while operating on the beach. Give yourself a cushion. Don't be a victim when the unexpected occurs."

Submitted by Lt. Gil Bever, VA-85

Break a Leg! The T-2 pilot had just completed a rate-of-roll functional check flight and was preparing to enter a loop for a VGI test. After accelerating to 340 knots, a 4-G loop was initiated. At approximately 300 knots, with four G's on the aircraft, the port main landing gear extended. The pilot immediately slowed the aircraft and began a controllability check.

Another Buckeye in the area was able to join up for a visual inspection which verified that the port main gear was extended and canted outboard. In addition, the landing gear doors were damaged, the overcenter arm had broken loose from the main mount, and the landing gear actuating cylinder had broken loose and was forced through the top of the wing.

It was determined there was little damage to the wing that would affect normal flap operation, so the T-2's remaining landing gear were lowered and slow flight characteristics examined. After a thorough check, it was determined an arrested landing would be accomplished in accordance with NATOPS. However, while making preparations for landing, the pilot discovered that the tailhook would not extend. This additional problem was not associated with the damage to the main landing gear. The only alternative left was to land and hold the port gear off as long as possible. After touchdown, both engines were secured and the crippled T-2 continued roll-out without the port main gear collapsing.

Ltjg. Rob Russell of VT-23 exhibited superb flying ability in coping with this situation. — Ed.

A Few Words On The Word "Safety"

By Cdr. Tom Johnson, USCG

I'M sure all of you assume the word "safety" was derived from the Middle English (ME) and Middle French (MF) word "sauvette." Unfortunately, this is incorrect. I have it on good authority from an *old* flight safety officer that *he* actually coined the word. He related that he designed the word, letter by letter, from words that described safety. I'd like to share his knowledge with you.

S — the letter "S" stands for "sense," that is, *COMMON SENSE.* The point being that the majority of safety is just the exercise of common sense. As you may have heard, the problem with common sense is sometimes it's not so *common.* Be on your guard.

A — the letter "A" stands for *ATTITUDE.* A safe individual has a positive and professional attitude on the importance of safety in the organization. This attitude is analogous to the old phrase "Think Safety." The letter "A" also stands for *ASSUME.* (That is, don't assume anything.) Safety involves a conservative mental process of not assuming. You know the old adage — assuming too much, when not balanced with good judgment, will make an ASS (out of) U (and) ME.

F — the letter "F" stands for *FITNESS,* both mental and physical. You have to be mentally and physically fit and satisfy those basic physiological needs before you can place the proper emphasis and attention on safety.

The letter "F" also stands for *FORESIGHT,* the ability to look ahead and foresee what could go wrong and what action would be required to make the evolution as safe as possible. (Remember Murphy's law.)

The letter "F" also stands for *FAMILIARITY.* Safety is being familiar with and knowing the equipment and procedures required in doing your work.

E — the letter "E" stands for *EDUCATION.* People should be educated to the importance of safety on the job. Safety is a portion of the daily routine, it is by no means separate and distinct. It goes hand-in-hand with a professional approach.

T — the letter "T" stands for *TALK.* Safety is a matter of talking and communicating. An absence of free and open communications in an organization on both a vertical and horizontal basis will spell disaster in the area of safety.

The letter "T" also stands for "take the time to do it right." You know the old adage, "we never have the time to do it right the first time, but we always have the time to do it right again a second time." You cannot overemphasize the importance in the area of safety in taking the time to plan and review the procedures before taking on a job.

Y — the letter "Y" stands for *YOU.* Safety is the collective effort of *all* individuals in an organization toward a common goal. The contribution or lack of contribution of each individual in the area of safety will show in the final count.

When you think safety, think of the words that it came from and are crucial to a safe and productive work environment; namely — common sense, attitude, not assuming anything, fitness, foresight, familiarity, education, talking, taking the time to do it right (the first time) and most important, you. ◄

Cdr. Johnson is a Coast Guard aviator who has flown the H-52 and H-3. He is currently the head of the Aviation Engineering Department at Coast Guard Air Station, Clearwater, Fla. He has an M.S. in Industrial Administration from Purdue University.

Nunzio's Guide for Easy

or How to Survive in the Carrier

By Cdr. J.R. Sanders and Lt. Tom "Nunzio" Clarke

1. Know your divert field — *cold*. Frequencies, runway length, lighting and NATOPS, etc. Write down heading, distance, fuel required, altitude to climb to and descent point *before* man-up.
2. *Pay attention to winds aloft* during the WX brief. Figure them into your bingo. Pay particular attention to how headwinds will affect a dirty bingo.
3. Know your max trap fuel weight before man-up. Brief possible hung ordnance affecting your asymmetric moment and max trap fuel weight.
4. On preflight, *check wingtip clearance* to adjacent aircraft. Note it — remember it — tell the other pilot to avoid crunches.
5. Know your gross weight and make sure proper weight is greased on nose gear door.
6. Mentally *note flight deck surface* — greasy, wet, icy, rolling, pitching, etc. — before taxi — *remember it* on your return.
7. Know your aircraft side number and position on the flight deck for an immediate lost brake call. Say it yourself once before chains come off.
8. Don't taxi without your mask on. Be ready to eject if necessary.
9. *Watch your power* as you taxi out of spot, rounding the corner.
10. If your left hand isn't busy — hold it near the emergency brake handle. Left arm on canopy rail doesn't hack it when you lose your brakes.
11. Don't consider riding an aircraft over the side. Auto inflating LPA will prevent your egress.

12. Always "mark" on your navigation computer sometime before launch. Get in the habit — do it every time without fail. It's a good backup when your TACAN quits or the ship goes EMCON.
13. Check and *double-check the weight board*.
14. Check fuel master switch locked forward. Also ensure the instrument gauges, especially ADI, are secure. You could get a nasty surprise on the cat stroke if they are not.
15. *Double-check your takeoff checklist* every time, especially during trap — cat — trap evolutions.
16. Make yourself point to the ejection handle and SALVO JETT button before tensioning on the cat.
17. *Think* about which way you'll turn for clearing turns before you salute. No clearing turns at night.
18. Use throttle friction and cat grip on the cat. EPP out (T/O Land) at night.

Living

Environment

19. Keep a position report on the tip of your tongue at all times. It's too late to figure out where you are and then tell someone after a flameout. Also, always have a rough heading back to the ship in your head.
20. CONSERVE FUEL: you'll be so happy sometimes.
21. Use your radar altimeter religiously — 5,000 feet, 1,200 feet, 600 feet (50 feet off the cat).
22. Obey the minute to live RULE.
23. Develop a heads-up lookout like you've never had before. Be especially heads up within 10 nm of the ship — in the overhead, entering the break. EXPECT THE UNEXPECTED. Never assume the other aircraft has you in sight.

24. Seek help/guidance from a squadron rep on the radios for emergencies. Always check NATOPS if time permits.
25. Never blow the gear/flaps down without first talking to the squadron rep.
26. FORCE YOURSELF TO PRACTICE PLUG. You will be so happy you did when you really need the gas.
27. Positively touch the gear handle/tail hook handle on each and every landing checklist. *Do the landing checklist every pass.*
28. Don't worry about flying OK passes. Concentrate on flying SOLID, PREDICTABLE passes with the emphasis on *getting aboard safely*. The OK passes will come.
29. As a general rule: NO HIGH starts in the DAY pattern. NO LOW starts in the NIGHT.
30. On ZIP LIP recoveries — get your LINEUP squared away early. The LSO will probably get rid of you before he'll give a lineup command.
31. Listen and respond to LSO calls immediately and positively.
32. DON'T FINESSE A LOW BALL.
33. Don't land without positive LSO acknowledgement. If in doubt, *wave it off.*
34. FULL POWER ON TOUCHDOWN ALWAYS (except barricade).
35. Don't shove the power up without first checking your brakes when taxiing out of the gear.
36. After shutdown, GET OFF the flight deck. Assume *every* intake alive and sucking.

Develop your own habit patterns and rules to live by. Stick by them — live by them.

These maxims on staying alive in the carrier environment were written by VA-83's LSO, Lt. "Nunzio" Clarke, in 1982. Cdr. Sanders revised and edited the material for Approach. "Nunzio's Guide" has proven to be invaluable for successive work-ups and deployments. It is frequently reviewed and discussed in squadron preparations for shipboard operations as a supplement to NATOPS and SOP. Although primarily written for an A-7 squadron, portions of "Nunzio's Guide" apply to any community that operates from the deck of an aircraft carrier. Keep in mind that it may not be in accordance with some aircraft NATOPS and of course, NATOPS always takes precedence.

"The temperature in the smoke layer can quickly rise to 1,000 degrees Fahrenheit . . ."

Cabin Fires

By Lt. Bill Bellinger

FORTUNATELY, aircraft cabin fires are extremely rare. When they do occur, however, they are killers. But there are survival techniques which can save lives in cabin fires.

Most of the information presented here is based on research material obtained from Federal Aviation Administration (FAA) testing for air carrier operations. Since the Air Canada DC-9 fire on June 2, 1983, many tests have been conducted at the FAA's Technical Center at Atlantic City, N.J. Most of the data was obtained by setting airline seats on fire and allowing them to burn until the whole cabin was engulfed in flames. While these tests may not exactly simulate the impact of a cabin fire in a P-3 or other Navy aircraft, the results cannot be ignored. Many of the materials in the cabins of Navy aircraft are similar, if not identical, to those used in airliners.

Once an aircraft interior is on fire, the smoke rises to the top of the cabin where it spreads to form a layer along the top of the cabin. The dividing line between the smoke above and the clear area below is well-defined. The temperature in the smoke layer can quickly rise to 1,000 degrees Fahrenheit while the temperature in the lower part of the cabin is still low. It is possible to survive in, and escape through, the lower part of the cabin. Intense smoke may obscure ceiling lighting or the intense heat may destroy it, plunging the cabin into darkness. Once the smoke has started to form along the ceiling, the FAA has found that between 90 and 150 seconds after the cabin is aflame, a violent explosive inferno called "flashover" will occur, after which the whole cabin is ablaze. While the FAA is not sure why flashover occurs, they speculate that the gasses generted by the fire may reach such a temperature, that they themselves ignite and cause the sudden explosion.

So, if you assume that the deterioration of the cabin is going to be gradual and constant, most likely you will die. FAA tests have shown that the flashover is very predictable and will occur between 90 and 150 seconds after the smoke fills the ceiling. You want to be out of there when it happens. This requires knowing where the exits are, even in the dark. Airborne, it would require being able to get to, and properly don, your parachute very quickly at all times and under any circumstances.

Another danger in cabin fires is the noxious gas buildup. Poisonous gases as well as carbon dioxide are generated by fire. In the Air Canada fire, passengers who held cloths over their faces found it much easier to breathe. Many fatalities in air carrier fires were found to be due to these poisonous gases, rather than the fire itself. This is one reason we are required to wear oxygen masks while fighting fires in Navy aircraft.

The P-3 and other large Navy aircraft are equipped with CO_2 extinguishers for fighting cabin fires. Water from water breakers is also available. During FAA testing though, CO_2 extinguishers would frequently put out the fire in the cabin seats, but the seats would reignite due to the residual heat shortly after the CO_2 was applied. The FAA determined that after the CO_2 smothers the fire, a wet blanket thrown over the seat prevents reignition. Many of the U.S. airlines have been replacing their CO_2 extinguishers with HALON fire extinguishers which are much more effective in putting out and keeping out fires.

The best solution to cabin fires is obviously prevention. Just knowing how lethal they are and how horrible the death must be should make any professional aircrew member a stickler for that. It is important to remember, however, that cabin fires can be survived, but it requires preparation and correct, immediate action.

Lt. Bellinger is a reservist with Patrol Squadron 64 stationed at NAS Willow Grove, Pa.

"Healthy Weight Gain"

By Lt. J.T. Reres

CONSIDERING the popular emphasis on physical fitness, it would probably seem a ridiculous contradiction to suggest "putting on a few extra pounds" for your health, unless, of course, you're skinny or malnourished. Perhaps you're a naval aviator who has the option to add up to five extra pounds of gear to his personal survival equipment. In this case, added weight could net a very healthy gain, especially in the event you're faced with an actual survival situation.

Have you ever promised yourself to supplement your survival gear, but never gotten around to it? Some have managed to add a few useful items, but the majority are satisfied with the "survival packet" the Navy provides. Now I'm not knocking our basic survival equipment, but why not supplement it?

First and foremost is extra water. We carry precious little and no other single item could enhance your endurance more. Studies show that most Americans are typically slightly dehydrated in day-to-day activity. Depending on the length of your sortie and your individual physiological makeup, you may experience dehydration *in flight*. That alone can be insidious in nature, robbing you of peak performance, especially in the later portions of your flight (like at night, pushing out of marshal on an instrument approach and then flying the ball!), so obviously the first step is to drink plenty of water before you go flying. Next, carry a plastic water bottle in the plane and rehydrate in flight. That way you can maintain an optimum fluid level and not start out behind the proverbial "power curve," should a survival situation present itself. Finally, add an extra water bottle to your survival vest, thereby increasing your ability to endure.

A second suggestion is the addition of a chemical light to your flight gear. Whether you're in your raft or facing a total electrical failure in the cockpit, a reliable light source could prove invaluable. Our squadron has added two chemical lights (available through the Navy supply system) to our survival vests, one short "bright burner" (30 minutes) and one "long burner" (12 hours). If used in your raft, their inherent waterproof design will ensure operation in a wet environment. If used in flight, these lights free your hands from having to concentrate the focus of your flashlight beam and are capable of illuminating a wide area. Plus, you are free to use your flashlight for other more practical purposes (like signals to your wingman when you're NORDO). There

are several other advantages, and if you keep your aircrew from taking the lights home or "popping them off" for grins, you will have another good emergency/survival aid.

Occasionally, you hear of a PRC-90 failing too soon or maybe not working at all. Frequently, the problem is caused by weak batteries. Why not carry an extra battery just in case. Granted, these little gems are expensive and *easily* corrode; but the initial outlay for extra batteries is obviously insignificant when compared to the additional communication *insurance* they provide. The corrosive characteristics are best dealt with by leaving the battery in its sealed plastic bag. This also prevents old/used batteries from being inadvertently swapped with the emergency spare.

The list could go on, but I will leave that to your imagination. Remember, carry a water bottle to be used in flight to rehydrate and maintain optimum body fluids. Add an extra water bottle to your personal survival gear. Also, throw in a couple of chemical lights and an extra PRC-90 battery. The potential list is endless, and I invite all aircrew to consider additional items. In the meantime, I urge you to appoint one officer, say your ASO or PR branch officer, and have him procure the above items for the entire squadron. Make installation an option to each individual and have the PR install them in the survival vest. ◄

Lt. Reres is the aviation safety officer for VS-37.

Let Me Make It Perfectly Clear . . .

By Lcdr. Franklin Jones

"PM-05 taxi to Runway 32 left, altimeter 30.21." You were busy ensuring wing-tip clearance and watching the lineman's sharp taxi-on signal and snappy salute. A glance to the right. The co-pilot, while asking about the Omega status from the TACCO*, nods his head and points with his free hand toward the parallel.

"You're cleared to 32 left, 30.21 on the altimeter." By deciphering the inquisitive furrow on your brow once again, No. 2 answers the unspoken question. Sure is nice to have someone like Lt. Sharp for the right seat. He is very proficient, always thinking ahead, anticipating and solving the many self-induced uncertainties which arise from

*Tactical coordinator — a naval flight officer in charge of the anti-submarine warfare mission in a P-3 crew.

"PM-05, clear the active immediately! Aircraft on takeoff roll!"

momentary distractions.

"TACCO, flight, set condition five and report."

"Papa mike zero five, ground."

"Ground zero five, go."

"PM-05, taxi to three two left via the north cross, hold short three-two right."

But attentions directed inside the aircraft deprived your hearing all of ground's instructions. "Was that for us?" you say.

"Ground wants us to use the north cross, skipper."

"We'll need an engine anti-ice, wing de-ice check. You can copy the clearance, I'll call base on radio 2 and advise them of our status."

Two radios working simultaneously, the engineer deftly ascertaining the condition of the aircraft's all-weather capability, in conjunction with the challenge and response completion of the takeoff checklist. A gentle tap on the flap handle. A break-in reading back the departure instructions and Lt. Sharp has checked flaps at the takeoff position.

"Right needle left ball, stand by to mark two seven zero." A glance at the departure end of the runway; looks like a C-130 is at position and hold.

"PM-05 clear the active immediately! Aircraft on takeoff roll!"

Enough power, a little luck, an alert controller and a few thousand feet averts a near catastrophe. How is it that two aircraft concurrently try to occupy the same piece of runway real estate?

A search of NASA's ASRS (aviation safety reporting system) data base produced 28,327 reports since May 1978 of incidents involving "runway transgressions." Not only do two aircraft try to co-exist simultaneously on intersecting runways and taxiways but they attempt it at an alarming rate. It is apparent that past operations need to be modified to reduce the potential of runway collisions.

Common to all runway incidents and near misses is a breakdown in communication. Along with omissions and wrong instructions, what is transmitted into one end of the microphone isn't always discerned as it was originally spoken. Aviation safety literally hangs not merely by the exact word but also by the order in which it is given. Tremendous amounts of essential and precise information are rapidly disseminated. Instructions are perceived and then executed almost immediately. Throughout the performance of a flight, many tasks, ideas and commands are conveyed. Directions communicated verbally, physically, with the wink of an eye or the touch of a hand; all vital, all upon an innumerable amount of information being correctly interpreted. Anything which can enhance and improve this communication process will assure a greater degree of safety.

The spoken word cannot be depended upon as being foolproof. Of the runway incidents which were reviewed, the common denominator to almost every one was some form of miscommunication or misunderstanding of stated instructions. As pilots, we often hear what is expected. This involves not only transpositions but also command compliance and executing aircraft clearances intended for other aircraft. Under present FAA regulations, when cleared to a specific runway, that clearance is also permission to cross all intervening runways without specific authorization. Additionally, it is common FAA procedure to position and hold aircraft simultaneously on intersecting runways. The possibilities of conflict are numerous; therefore, anything that can be done to correctly inform other aircraft of our exact intentions would be most beneficial.

After too many close calls on the runway with other civilian operators, and following a collision on the runway, the airline industry modified takeoff procedures to make their operations safer. Pioneered by United and American Airlines, the habit of withholding the landing lights until cleared for takeoff has improved runway safety. It is now a commonly accepted practice that clearly alerts those down field of their immediate intentions while on the runway, a simple but effective method that accurately signals other aircraft immediately when the takeoff rolls has begun.

By adopting this method of turning on the airplane's landing lights only when cleared for takeoff and immediately prior to commencing the roll, all other airport traffic is made aware of runway intentions. This form of communication is very effective, it is neither garbled nor misunderstood. Landing lights on at the other end of the runway mean don't venture further. That airplane is assumed to be on the roll, not position and hold! When cleared to cross and landing lights are shining, question the controller's instruction or replay the brain tapes to determine if it is safe to trespass the runway. In either case, don't go onto the runway; snap the accident chain before it is complete. Avoid an accident or near miss.

At a slow closure rate, during low visibility, at certain times of the day, at dusk, even a tired eye muscle can camouflage the relative motion of an aircraft pointing directly at your nine o'clock. Publicizing the takeoff roll with timely use of landing lights will warn off those bound to cross your path and ruin a good day.

Although this is an excellent indicator, remember nothing is foolproof. Don't rely 100 percent on landing lights, use all clues available. An airplane sitting on the end of the runway should still be scrutinized even if the landing lights are as blank as the skipper's sense of humor. The switches are operated by humans and these beings at times forget. Be assured that as you roll toward the active, headed for the other side and then notice landing lights beaming, stop! The second taken to clarify taxi instructions may be the difference between beers at happy hour and an accident report. ◄

Lcdr. Jones is a reservist flying P-3s with VP-91, NAS Moffet Field, Calif. He is an engineer and flight standardization check pilot with American Airlines, Inc., on 727s and DC-10s while flying regularly as a 727 first officer.

Planning for Scan Regression

By Lcdr. G.R. Murchison

Scan regression is due to the need (or perceived need) to monitor something more closely than usual at the expense of something else.

NOT long ago, I was standing in a hole just below the crest of a hill, looking over the top at the next checkpoint on a low level route. The smell of charred earth, partially burned JP-5 and scorched aluminum hung in the air like a heavy blanket. Twenty thousand pounds of airplane lay scattered in little pieces over some 300 acres. My friend, the only witness, would never be able to tell me why his airplane had missed clearing that hill.

I felt a certain amount of deja vu as I stood there trying to sort out the "how" and the "why" of this mishap. Even after sifting through all the records, all the parts, all the witness statements, all the EIs, the official final conclusion made a sorry epitaph . . ."Undetermined. Probable cause: loss of situational awareness." This same epitaph had gone with too many of my friends in the business.

Another feeling that I had was a very personal one that goes something like this . . . "Is there anything that I did or said, or anything that I failed to do or say, that may have somehow contributed to this mishap? If I had been in that airplane, would my buddy be standing in that hole wondering why I hadn't come home? Or is there something that I know or do in an airplane that's just a little bit different, something that I could have told him that would have kept him alive?" While I will never know the answer to those questions for sure, I do see a common thread in many mishaps that have a cause of "loss of situational awareness." I call it "scan regression."

Scan regression is something that we all experience when flying. In fact, we are all taught scan regression for some specific situations. For example, when flying the meatball, we've all heard the old chant, "Meatball, lineup, angle of attack, meatball, lineup, angle of attack, meatball, lineup, meatball, meatball, meatball!" for the final few seconds of a carrier approach. This chant is designed to train the carrier aviator to plan for the inevitable scan regression that occurs whenever things start happening fast. It is, in effect, training in *scan prioritization.* Another very familiar example of prioritization training is the old saying "Aviate, navigate, communicate."

Our eyes are designed to focus on a very limited area at any given instant; yet to effectively fly an airplane, we must monitor many factors simultaneously, and most of this information is received visually. We spend a great deal of our time developing scan patterns that allow us to keep track of what the airplane is doing to "maintain situational awareness." The "loss of situational awareness" so often cited as a cause factor in aircraft mishaps is really the failure to modify scan to include that information necessary to prevent the airplane from trying to do something it can't — like trying to fly through dirt.

It is a fact that as the pucker factor rises toward extremis, we start dropping things out of our scan. If the wrong item(s) are dropped, then situational awareness is lost and the results can be disastrous.

Scan regression is due to the need (or the perceived need) to monitor something more closely than usual at the expense of something else, or as the result of a particular scan item losing its importance (or a perception that it has lost it's importance). For example, an oil pressure gauge that is fluctuating or showing a drop in pressure will demand far more attention than a normal one; the VSI in a dive bomb run is useless and is not scanned. Where we can get into serious trouble is when we fail to recognize that an item has become essential, or we drop an essential item for one that is not.

It is therefore important to plan for the inevitable scan prioritization so that we don't waste time on non-essentials at the expense of items that are. Know what your scan priorities are. For example, the initial phase of a missed approach in rough weather requires a planned scan that concentrates on aircraft attitude, airspeed (AOA), altitude and VSI, followed by the inclusion of heading, position and missed approach route compliance sequentially. If scan prioritization is required (due to the need to handle an emergency, for example), an order to reduce concentration on things to minimize the loss of situational awareness could be (1) route compliance, (2) position, (3) heading, (4) VSI and altitude, (5) airspeed and last, attitude. Dropping aircraft attitude, airspeed and altitude from the scan to perform an emergency procedure could very quickly become a lousy trade.

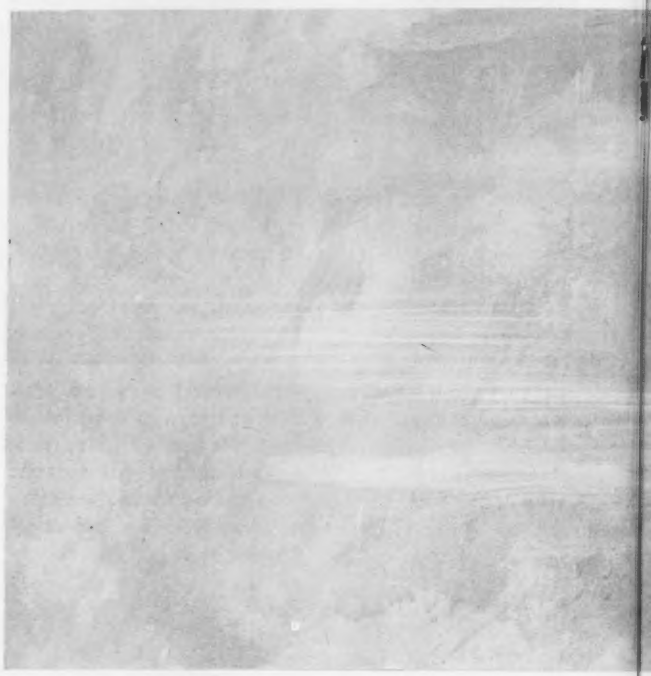
The application of scan prioritization has been formalized in many of the things we do. This is where abort criteria come from. I think that it is worthwhile, however, to think about every phase of flight from the standpoint of "what information is most important" under the circumstances. It may just keep one of us from flying into the water while looking for something (like the surface contact on radar) when altitude is more important. ◄

Lcdr. Murchison is assigned to VA-27, an A-7 squadron based at NAS Lemoore, Calif.

Squeaking by a Sandstorm

. . . To m

By Lt. Nels A. Frostenson



THE flight briefed at 1445 for a normal late afternoon cycle. It was routine mission of the area for 90 minutes and return to the ship after sunset. Our television brief rambled on: "mission ESM, under E-2 control; monitor button 3; case III night recovery; the weather is layered, 2,000 scattered to 30,000 broken, visibility three miles." Afterward, we discussed emergencies, radio controls and who would carry the camera, authenticator and divert pubs.

In the paraloft, Dan, the pilot, and Bob, another NFO, and I suited up. With 40 pounds of flight and survival gear, we strolled across a greasy, slick, steel flight deck. The sky was white, hazy and cut at the horizon by a solid, deep, intruding blue ocean. "The wind has died off a bit," Dan commented, as we preflighted 606, "but the visibility is worse." Unknown to us on the night before a North African front had created a sandstorm which would soon engulf the carrier.

Ascending the ladder, stepping on platform, strapping in at six places and setting up the cockpit switches — it was all routine. Not a word was said to anyone. Dan broke the silence, "starting number one." Flipping switches, turning on instruments and reading checklists were all procedures that we could repeat "blindfolded in our sleep."

As the humming engines ran up on the power, the aircraft slowly lurched forward. We taxied to the "yellow shirts" directions. The air boss cut in on the radio, "99 Battle-axe, case III launch, altimeter 29.50." That meant the visibility was getting worse. Dan was right.

Number one, the closest catapult, was ours. Slowly the aircraft moved through the steam and into the shuttle. Tension, full throttles and the thunder of the engines beckoned us to launch into the silent twilight. "Compass, controls and cat-shot to go!" Above the roar of the engines I heard, "Controls are free. I'm ready and saluting." I pressed my head firmly against the upper seat and stared at the instruments. My initial feelings were a tug and a jolt, like being slammed against a wall. My peripheral vision told me we were moving quickly but I kept my eyes caged on the airspeed. The needle moved slowly until, poof, silence and we were off of the end of the ship. The airspeed kicked up to 150 and the pressing force of the shot that held us against the seat magically disappeared.

"Doppin', squawking and talkin', 606 airborne." Priority actions were more checks and a quick glance out of the cockpit. To my surprise, we were only 500 feet above the water and already in a milk bowl. It was not a nightmare, an illusion or a trick. It was the worst visibility I had ever experienced. Any combination of weather with the current visibility would be unflyable.

We continued climbing through the stratus layers and the light cumulus. At 24,000 feet the visibility broke wide-open over an ocean of gentle white puffs. The sun dipped towards the horizon; it was sneaking out the back door.

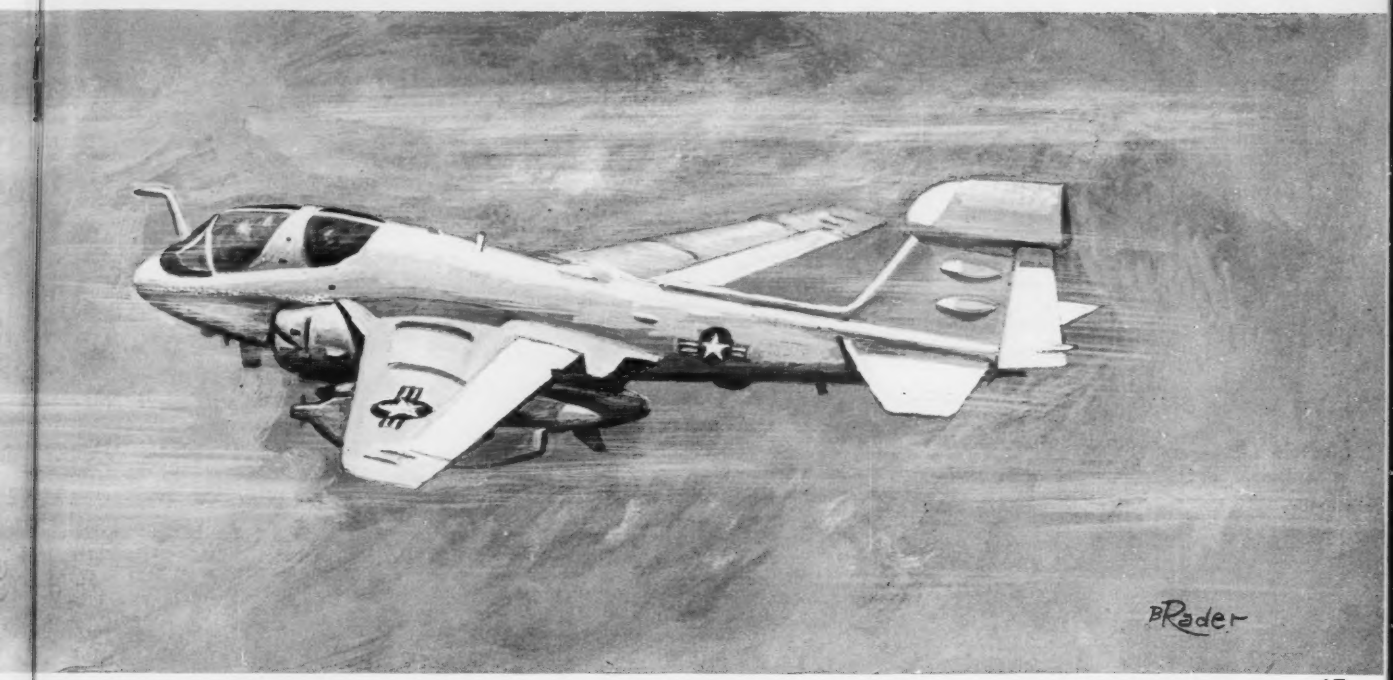
We found the tanker and joined for "Texaco." Our plane plugged the trailing basket and we continued on our way. Little did we know, the 2,000 pounds of gas that we received would be helpful later. Dan updated the computer navigation using the radar, pinpointing "friendly island airfield." We flew above the ceilings for an hour, proceeding southwest while Bob operated the system in back.

The sun dipped further, creating an orange tint that rested on the horizon. Thirty miles southwest of the ship, the cloud-lined cold front broke into an open sea. A second glance revealed that the open sea was actually a solid haze spread smoothly to the horizon, hovering at 4,000 feet.

At 1800, 15 minutes after sunset, we called "RTB." Our initial holding instructions were: hold on the 020 radial, 22 DME at 7,000 feet. Halfway to that point while descending through the milk bowl, 'marshal' called us to descend to 1,200 feet and head two-three-zero degrees vectors to the ship. It alarmed us that we were commencing the approach now, 20 minutes ahead of schedule. Something had gone awry.

The fading light and invading haze were getting worse. Twelve hundred feet above sea level appeared to be no better than the previous 23,000 feet. Our external lights were

o my surprise, we were only 500 feet above the water and already in a milk bowl . . .



turned on and what we saw was not encouraging. I could barely discern the green wing tip light.

The plane sank at 650 feet per minute. "On glide slope and on centerline, three-fourths of a mile, call the ball," said the controller. The 'meatball' was not visible. 'Paddles' called, "contact." He saw us first; "left for lineup, easy on the power." Suddenly, at one-half mile, the white mast light of the ship pierced the snowy surroundings. Within one-fourth of a mile, the meatball appeared. It was low, then red, then it dropped off of the lens. We were below the flightdeck! 'Paddles' called for a wave-off and flashed the red 'wave-off' light. Dan added power and raised the gear to fly clear of the deck. We were safe. The controller radioed, "606, climb to 1,200 feet, cleared downwind, report abeam." The end of that pass released adrenalin and eased anxieties. We knew what the vis' was like now. I called, "606 abeam, state 7.5." There was plenty of gas to shoot a couple of approaches or to bingo. The controller set us up immediately on the approach at three miles. No one else was in the landing pattern. The other aircraft were either aboard or had bingoed.

The sight of the same milky goo started our hearts pounding just as fiercely as the first time. At three-fourths of a mile, paddles called "contact" again. The controller dropped us off left of course. As the lights pierced the white haze to the right, Dan dropped the right wing, arriving on centerline. The meatball was high. The plane hung in the air as it floated over the landing area, missing the pendants. "Bolter, bolter, bolter."

Dan flew the plane around the pattern, back into the foggy night, and set up for the next approach. Now we had the reassurance that we could touch the deck.

The third pass was less eventful and the controller guided us to position that would not allow us enough time to make corrections to land. We were waved off by the time the lights came into view.

The fourth pass made me eat my heart. "Paddles contact," rang out at three-fourths of a mile. The gyro had tilted left in the turn while we were setting up for the approach, but my body sensed something different as I leaned to the right. Vertigo had set in; it was time to believe the instruments.

At one-half mile the drop lights appeared left and the mast light was straight ahead. "There are the drop lights, bring it left." Dan rocked the wings, dipping left, adding power and straightening. Our eyes widened. The whole approach was confusing and disorientating as I remember it. The plane swayed and descended over the stern. Then it smashed down and the hook trapped one of the pendents. We rolled out towards the end of the angle-deck, happy to be survivors. The tug and release of the wire completed our landing and we went back to flipping switches and reading checklists.

Flight 606 ended with a sigh of relief, "That trap felt good, nice to be back aboard." Dan acknowledged with two clicks of his mike. ◄

Lt. Frostenson is an NFO with VAQ-137.

Fuel "Famine"

By Bud Baer

THE C-12 crew was just about ready to leave on a routine three-hour cross-country flight from NAS East to NAS South. They had been to air ops for the weather brief and had filed the flight plan a few hours earlier. Preflight went very quickly, only a few minutes, and the engines were started.

Suddenly the co-pilot did a double take when he looked at the fuel gauges. They showed the tanks weren't topped off. In fact, they indicated that an additional 250 pounds of fuel could be added. He called the pilot's attention to this apparent difference.

"That's just a deviation because we're on the ground," the pilot responded. "You'll see our fuel load increase on the gauges as soon as we're airborne."

After boarding five passengers who carried a lot of baggage (untagged for weight), they took off. When they reached altitude and leveled off, the co-pilot took another look at the fuel gauges and said, "They don't show any gain in fuel. They show less than they did on the ground. Are you

. . . They touched down in a sparsely populated area on the edge of the city, just missed a couple of houses and slammed into a large oak tree . . .

sure we had full tanks when we took off? Can we make it OK to NAS South non-stop?"

The pilot answered confidently, "We can make it. Don't worry."

Since the pilot had considerably more time and experience, the co-pilot "accepted" the response without further comment. Yet, he felt uncomfortable about it. If he were in command, he wouldn't have done it this way, he thought. He'd have checked it out on the ground before departure.

The weather briefing they had received hours before manup was expired by the time they took off. They encountered headwinds stronger than anticipated and were running a bit behind schedule. About 100 miles from their destination, the right low fuel level caution light came on. The co-pilot's concern was reignited and he suggested they "set down and top off." They happened to be almost overhead an Air Force base. But the pilot elected to press on, still confident that fuel was sufficient to make his destination on a route he had flown frequently. In fact, he accepted an early let-down from Center and did not remain high to conserve fuel.

Near the end of the flight, the starboard engine suddenly flamed out. They were only 25 miles from NAS South. The pilot immediately restarted the engine with left-to-right crossfeed. But now he, too, had become concerned and asked approach control for the nearest airport. He had his alternate in sight, but five miles out both engines quit.

The plane became a glider, a heavy one descending rapidly. It broke out of the clouds at 400 feet AGL, giving the aircrew precious little time to find a place to set down.

They touched down in a sparsely populated area on the edge of a city, just missed a couple of houses and slammed into a large oak tree. The pilot was killed, and the aircraft was "totalled."

This was a classic case of a mishap due to fuel exhaustion. On this one, there was far from adequate preflight planning, en route fuel monitoring, altitude selection, gross weight limitation factors and others. Had the pilot topped off the tanks at NAS East before leaving, or stopped just once along the way to refuel, this mishap would not have occurred.

In such instances, NATOPS states the most prudent course of action — "land as soon as possible at the nearest suitable airfield."

There are innumerable causes of fuel exhaustion/starvation. Some of them include:

- Poor flight planning.
- Fuel system mismanagement.
- Failure to read correctly fuel quantity gauge/warning lights.
- Ignoring or discounting low fuel warning lights.
- Ignorance of proper fuel tank switchology.
- Poor navigation (getting lost).
- Excessive use of afterburner.
- Fuel system component failure.
- Improperly calibrated fuel gauges.
- Lack of coordination and support from controllers on ships and air stations.

A Naval Safety Center computer readout covering the past 10 years shows 62 mishaps resulting from fuel exhaustion — incidents that could be definitely attributed to fuel starvation. These included destruction of 17 fixed-wing

Because the helo ran out of fuel in flight, pilot error was indicated as a cause, in addition to pilot overconfidence, inadequate flight planning, violation of existing instructions and poor teamwork with other crew members.

aircraft and nine helicopters. Ten persons lost their lives in these mishaps.

Fuel exhaustion can be particularly critical during CV operations. A carrier pilot should keep in mind that the potential to fly a bingo profile to a strange divert field exists for each flight. The ship's air ops may on rare occasions become so overloaded that it flies you out of gas. The magic airborne tanker just might not be up there, or it may be, but doesn't have any fuel left for you. Combining low fuel states with poor weather conditions at divert fields or heavy headwinds en route, you may find yourself suddenly placed in an extremis situation. Your tower and air ops watch standers must monitor closely the bingo fuel figures to insure accuracy. You must constantly check distances to divert fields and compare your computed bingo fuel with the ship's figures.

Case in point was the single-seat jet that had a system failure during CV ops. At 12 nm on final to the CV, the pilot activated emergency extension of gear and flaps. Now in good shape to land, he called ball with a fuel state of 4.2. But he boltered.

He was diverted to bingo some 100 nm away. Unfortunately, headwinds aloft were abnormally high — 110 to 112 knots. He continued to buck them and soon his destination NAS was in sight. He still had 200 pounds of fuel indicated. Suddenly his engine flamed out. He had no choice but to punch out. Fortunately, he made a successful ejection, landed in the water and was soon rescued by a boat.

To have avoided this mishap, there are a number of "if only's." **If only** air ops had inserted his low state emergency aircraft into the first part of the recovery and had determined a correct fuel figure, he might have made a normal landing on the CV even if it took a couple of go-around's. **If only** there wasn't a breakdown in proper bingo fuel computation on the part of the pilot and the CATCC (carrier air traffic control center), they would not have diverted him to a field he couldn't reach.

Sometimes just finding a bingo field can be a critical problem. An aircraft on a night electronic countermeasures mission was directed not to land on the carrier due to heavy weather and poor visibility. During its bingo evolution, it could neither communicate with nor locate its bingo field. Approaching fuel exhaustion, the crew elected to eject. They eventually made it to safety. In retrospect, one of the major problems here was the selection of a divert field known to be deficient for use by tactical aircraft under night IMC conditions.

Primary causes of fuel starvation include (1) material failure or malfunction, (2) pilot error or (3) incidents attributed to other personnel such as maintenance workers or supervisors, a squadron's CATCC observer or perhaps another member of the aircrew. A high percentage of fuel exhaustion mishaps is caused by pilot error. Here are a few such instances:

- KA-6D — This tanker-configured Intruder, one would think, couldn't possibly run out of gas with all that it carries. Yet, this one was on a cross-country ferry flight without its load of extra petrol for other aircraft. Shortly after takeoff, the port low fuel warning light came on. The pilot decided it was a light malfunction and disregarded it. Near his destination, the similar starboard light flashed on, and he became worried. Within moments both engines flamed out, but the crew made successful ejections. The pilot was cited for continuing flight with a known fuel quantity discrepancy.
- E-2B — On a training flight a low fuel caution light illuminated. The pilot elected to actuate the interconnect until the low fuel light went out. While on short final GCA, the Hawkeye pancaked in a cornfield less than a mile from the runway, seriously injuring two in the crew and "totalling" the aircraft. The pilot had ignored the NATOPS warning that fuel gauges are sometimes unreliable and that caution lights are primary fuel indicators and should be taken seriously. He was cited for improper flight planning, poor en route procedure and improper fuel monitoring.
- F-4N — The pilot was nearing completion of his mission with a 7.5 fuel reading on the counter. All external fuel had been transferred. He used considerable petrol for his final engagement and following a "knock it off," the Phantom had a double engine flameout. Response to his throttle movement was nil. The fuel low level warning lights never came on, and the automatic fuel transfer was inoperative. He tried several "relights" without success. It was soon time for him and his RIO to eject, which they did with success. A later investigation showed that gripes had been written about the low level fuel warning system. Efforts had been made to correct this, but questions still remained. The pilot was cited for fuel mismanagement.
- T-2C — Returning from a training flight, the pilot was delayed in landing because of a fouled runway. He knew he was low on fuel, but he thought he had enough and didn't advise the tower of his situation. After substantial maneuvering, he was given the green light. On final approach, the Buckeye flamed out from fuel starvation, impacted 225 feet short of the runway and skidded 140 feet to a stop. It sustained alpha damage, but the crew was unhurt. Pilot error was noted because he had failed to declare an emergency with a known low fuel state. He tried to stretch it but came out on the short side.

• HH-46A — The Sea Knight was flying an over-water mission with a known fuel quantity indicator discrepancy. It had a dual engine flameout due to fuel starvation. The helo was autorotated to a water landing. It lost its watertight integrity when it touched down hard. It rolled over and sank. Fortunately, all of the crew and passengers were rescued with only one minor injury. Pilot error was noted because the pilot had disregarded the fuel quantity indicator discrepancy.

• CH-53D — The helo was on a long-range mission and was running short of fuel. The pilot aborted the mission to proceed immediately to a refueling point. The gauges warned him that fuel exhaustion was imminent. He decided it was time to put it down even though he wasn't at a refueling point. He was too late, though, because on short final both engines flamed out. The Sea Stallion struck the ground hard, resulting in a Class "A" mishap.

Most fuel exhaustion mishaps could have been avoided. Sometimes the cause of **"an empty tank"** is a direct result of **"an empty head."** To help keep you from running out of fuel, the following guidelines should help:

• Always be fuel conscious. Keep your eye on the gauges.

• Learn your gauges tolerances. Don't try to use **almost all** of your fuel. Save enough for any contingency.

• Don't try to stretch your range. Many fuel starvation mishaps take place **within 10 miles** of an appropriate landing field.

• Use the **whole** flight team to help keep track of fuel. RIOs, BNs, etc., should be just as fuel conscious as pilots.

• Believe the low fuel warning light. It's usually trying to tell you something **extremely** important.

• Advise controllers immediately if you have a fuel problem. They may be able to help.

• Make sure that transocean flights, bingo evolutions, etc., are properly planned and coordinated with the operations supervisor.

• Call on maintenance to check out and correct gripes on fuel system malfunctions early-on.

Finally, whenever you have any indication of a potential fuel exhaustion problem, **seek out and land** at the closest field or on your CV, if possible, at your very first opportunity. Otherwise, you may be coming down sooner than you think without a field or your ship to set it on. ◄

Bud Baer is a staff writer for Approach.

A Collection

By Lcdr. Steve Duffy

WHEN assigned as the safety officer of HC-16, I wanted to define safety leadership specifically and then develop a method to apply it to the many squadron leadership roles from commanding officer to executive officer, on down the chain of command to the senior man on a two-man task. I grabbed a Webster's dictionary and began collecting related messages and Weekly Summaries.

According to Webster's, safety is "the condition of being safe from undergoing or causing hurt, injury or loss," and leader as "a person who has commanding authority or influence." Combining these results in "the capacity to influence others to prevent them from undergoing or causing hurt, injury or loss."

With safety leadership defined, the following are a few selected excerpts from my collection:

1. NAVSAFECEN SUMMARY OF MISHAPS 84-47 (07-13 DEC) 131400Z DEC 84 — "Safety is a product of sound management, attention to detail and learning from our mistakes."

2. CNO AVIATION SAFETY MATTERS 042000Z OCT 84 — "Recent mishaps again highlight that reducing aircrew and supervisory error remains our most persistent challenge in aviation safety."

3. CNAL WEEKLY SAFETY BULLETIN 50-84 171702Z DEC 84 — "Successful safety can only be managed the way any other organizational problem is managed . . . through specific assignment of personnel to perform specific tasks, through the granting of authority and through the maintenance of a strict program and accountability. The typical mishap is a combination of personnel error, coupled with management error. Because of this, correction of an individual seldom addresses the real problem. Successful safety practitioners have learned to look beyond the actions of individuals and into the system within which they operate."

4. CNAL WEEKLY SAFETY BULLETIN 35-84 271702Z AUG 84 — "If personnel don't know the rules, then management has failed.

"If your personnel are allowed to violate the rules, then management has failed.

"Just as management is responsible for production, scheduling, quality and all other organizational tasks, it is totally responsible for the complete operational envelope. In a peacetime scenario, there is absolutely no reason for management, at any level, to accept unnecessary risk. To do so, is to violate the most basic charter given to any military (or civilian) manager."

5. CNAL WEEKLY SAFETY BULLETIN 39-84 241702Z SEP 84 — "Safety Tips For Inspectors: How to turn people on to safety.

a. Show a relationship between safety and mission accomplishment.

b. Gain their confidence by:

(1) Demonstrating competency

(2) Trying to ensure they have a safe working and living space

(3) Being "people" oriented

(4) Not being a gossip or agitator

(5) Informing them of their rights (not judicially speaking)

c. Be a good listener

d. Be fair

e. Work on problems (not personalities). Ensure they're initially identified and worked on.

f. Use the chain of command.

g. Show the individual the advantages of safety to him/her."

6. WEEKLY SUMMARY NO. 34-84 (19-25 AUG 84) IS SAFETY PARAMOUNT? by Cdr. J.P. SCIABARRA (VA-27) — "To the true professional, safety is a byproduct of his knowledge and its application, not an end in itself. The professional consistently does things right, regardless of the situation. He pushes his aircraft to the limit but not beyond. If you check the back of his logbook, you'll find he has a zero accident rate record.

"Therefore, I submit that professionalism is paramount, and if you are in a group of true professionals, safety is embodied in everything they do."

As for a method, it is directly linked to professionalism. Be smart and be sharp. Know your job and the dangers involved. Care about what is going on. Don't hide behind your desk. Get involved. Know the rules, follow and enforce them. Responsibility and accountability are paramount. Should a mishap occur, look beyond it to the system in which it took place, and learn from mistakes.

Let's put that into action. Getting started is usually the first big obstacle. First, call the Safety Center and request a printout of all the mishaps for your type aircraft over the past five or 10 years. While waiting for them to arrive, get with the quality assurance officer and have him gather information on MAFs generated as a direct result of pilot error such as Nr overspeed in a helo or excessive "Gs" on a fixed wing, as well as recurring system gripes resulting from maintenance error due to a lack of system knowledge. Also, find out how often the division officers tour their spaces. Check with your standardization board. See how many PMCF (post-maintenance check flight) pilots there are, when they transfer, are there enough, or are a few doing all the work. The same goes for PMCF crewmen, squadron duty officers, instructor pilots and aircraft commanders.

Once the Safety Center printouts arrive, check the mishaps comparing them to the information you get from the quality assurance officer. Were any attributed to problems in the areas that your maintenance appears weak? If so, get with the maintenance officer and devise some training for the shops and at AOMs. Use the rest of the printouts for AOM briefs as well. A great idea is to research your own squadron's history. List in chronological order all mishaps and all major problem areas of the past five to 10 years. Look for trends. This makes a great presentation for both officers and enlisted.

Sit in on the enlisted safety committee meetings and look over the past year's minutes, keeping an eye out for trends and attitudes. Make sure the command safety petty officer is active and providing training.

As part of knowing your job, get a copy of all squadron safety-related instructions. Read each, extracting all the action items. Be sure you are complying. You might as well update them while you are at it.

Safety leadership was defined and many others' ideas as well as numerous action items listed. A simple, sure-fire method of application, however, seems to be quite elusive. Motivating others to think and act safely is the result of a lot of continuous hard work with command support.

It appears that the answer lies in developing professionalism in each and every squadron member. That also appears to be a topic for another article, but in spite of that . . .

CNAL AVIATION SAFETY 081800Z JUN 84 — . . . "Now is not the time to take things for granted. Now is not the time to be complacent. Now is the time to re-emphasize good leadership. Now is the time to take that round turn. Now is the time to take that deep breath and renew our aviation safety efforts with vigor." ◄

Lcdr. Duffy is a student at the Naval War College, Newport, R.I. As a UH-1N pilot, he served with HC-16 as assistant maintenance officer and squadron safety officer.

WESTPAC Wahoo

By Lcdr. D.P. Dudek

THIS was my first fleet A-7E squadron and we were operating from NAS Cubi Point. I was on a three-plane bombing mission with an experienced second-tour flight leader. The weather was forecast to be generally VFR but with periods of rain, low clouds and poor visibility, and towering cumulus in all quadrants.

Preflight, takeoff and rendezvous all went as briefed. En route to the target, the weather deteriorated to the point where the flight lead decided that it was not sufficient to complete our assigned mission.

When we contacted approach control for practice approaches and landings, the flight was informed that the weather at the field had also deteriorated. Low ceilings and driving rain had put the field below TACAN minimums and the precision radar was now inoperative. With plenty of fuel, our flight leader decided to hold overhead and wait for either weather conditions to improve or the precision radar to come up rather than divert to Clark AFB.

After holding for approximately 45 minutes, the precision radar was operative. The third aircraft in our flight was detached to attempt an approach. He would have to execute a short field arrestment due to the extremely wet condition of the runway and the tendency of the Corsair to hydroplane. We would wait for the runway to be cleared prior to commencing our approaches. After about 15 minutes we were notified that although he had successfully landed, he had hook skipped and was on a divert to Clark AFB and that the precision radar had once again gone down.

With slightly less than one hour of fuel remaining we diverted to Clark AFB. On final approach to the runway, with darkness approaching, I saw that the runway was partially obscured by an approaching storm. On short final the tower directed a wave-off. There were vehicles on the runway.

Approach control vectored me around for the next approach and then informed me that due to a 180 degrees shift in the wind, they were changing the duty runway. At this point with approximately 30 minutes of fuel remaining, I declared an emergency. Turning to final approach, I was told that the precision radar was not yet ready and I was instructed to continue on my vector. Approach control then asked if I had the runway in sight. I saw the runway environment below me through the darkness and rain but I was in no position to land. With fuel running low, I decided to attempt a VFR approach to the runway. At 600 feet AGL all I could see were the lights on the ground directly below. Again, as I turned to the final approach heading, I was in no position to land. Precision radar was finally ready and approach control began vectoring me. On the upwind leg I broke out of the storm and saw that, although still overcast the visibility was good and I could see into the valley where NAS Cubi was located.

Turning to the final approach course I was told that Clark had experienced a power failure and lost the runway lights. I decided to clean up and divert to Cubi Point.

I held the gear until on short final at Cubi, in order to conserve the small amount of fuel I had left. Due to the extremely wet runway, I had to make a field arrestment. As I touched down on the runway, I felt relieved. However, the hook did not catch the wire. With two more sets of arresting gear down the runway, I decided to remain on deck instead of getting airborne and trying again. I was not sure that I had enough fuel for another landing attempt. However, I began to doubt my decision as I passed over the midfield gear and again did not feel the tug of the wire. Then, as I touched the brakes I got a first hand lesson on why A-7's field arrest with a wet runway.

I went to military and used the flight controls to realign myself with the runway. As I approached the long field gear, I modulated the power to give myself the option of a go-around if I should hook skip again. The third try was a charm and my Corsair was pulled to a stop by the wire. The tower then asked "Do you need any further assistance?" My answer, "Negative," could not express my feeling of relief having ended a nightmare.

In the years that have gone by, I have often thought back on the events of that flight and tried to decide on a course of action that might have averted the near disaster. A few items have come to mind. First, when my divert field decided to change the duty runway, beside declaring an emergency I could have insisted on landing on the old runway. Although, I would have had a tail wind, a lot of time and fuel would have been saved. Another conclusion I've come to is that my attempt at a VFR pattern in IFR conditions was poor headwork, and only wasted more time and fuel. Finally it has taught me that ready room discussions of emergency situations, briefing NATOPS "questions of the day" and listening to the experiences, opinions and decisions of other aviators are necessary to broaden an individual's knowledge and provide him with some foundation to make intelligent decisions when things don't go as briefed.

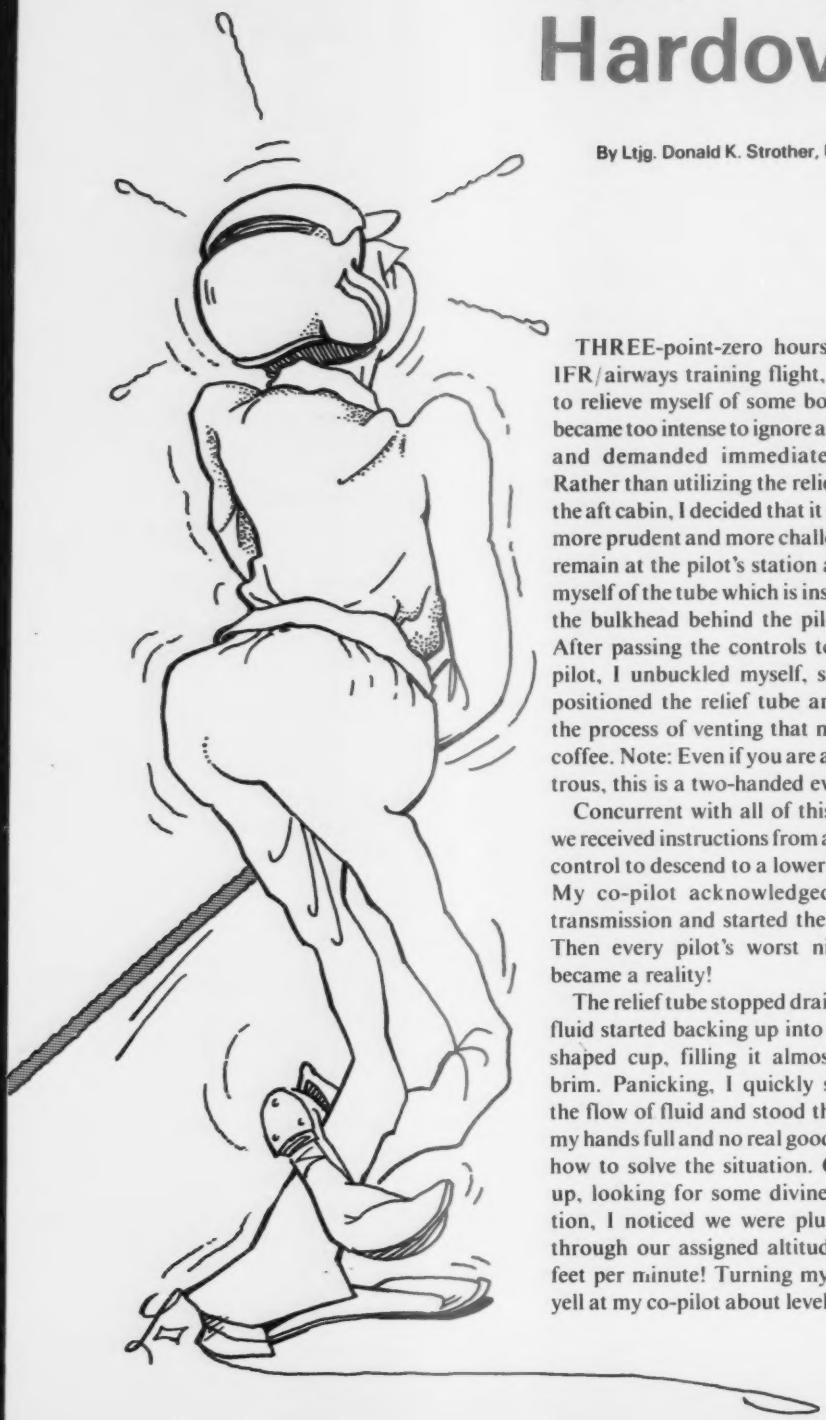
Ready room flying provides one of the necessary aviation building blocks in the growth of a Naval Aviator. Keep it up! — Ed.

Lcdr. Dudek is the air safety officer and an A-7E pilot with VA-146 based at NAS Lemoore, Calif. His unit is assigned to Carrier Air Wing NINE with deployments on the USS *Kitty Hawk*.

A helo commander holds his own during an in-flight emergency.

Relief Tube Hardover

By Ltjg. Donald K. Strother, USCG



THREE-point-zero hours into an IFR/airways training flight, the urge to relieve myself of some body fluids became too intense to ignore any longer and demanded immediate action. Rather than utilizing the relief tube in the aft cabin, I decided that it would be more prudent and more challenging to remain at the pilot's station and avail myself of the tube which is installed on the bulkhead behind the pilot's seat. After passing the controls to my co-pilot, I unbuckled myself, stood up, positioned the relief tube and began the process of venting that morning's coffee. Note: Even if you are ambidextrous, this is a two-handed evolution.

Concurrent with all of this activity we received instructions from approach control to descend to a lower altitude. My co-pilot acknowledged ATC's transmission and started the descent. Then every pilot's worst nightmare became a reality!

The relief tube stopped draining and fluid started backing up into the cone shaped cup, filling it almost to the brim. Panicking, I quickly stemmed the flow of fluid and stood there with my hands full and no real good ideas of how to solve the situation. Glancing up, looking for some divine inspiration, I noticed we were plummeting through our assigned altitude at 700 feet per minute! Turning my head to yell at my co-pilot about leveling off, I was confronted by a wild-eyed lieutenant commander who was yelling something over the ICS about a "stuck collective." Visions of what the accident report would read like flashed through my mind; i.e., "Pilot in right seat found unbuckled in cockpit, left hand holding the relief tube, right hand grasping . . ." It was not a pretty picture.

Our perilous descent continued unchecked! Not being able to throw my hands up in despair, I panicked. Fortunately, through my tear-laden eyes I noticed that the hose leading from the bulkhead up to the relief tube cone was being pinched between the pilot's collective and the left side of the pilot's seat frame. This was effectively preventing any upward movement of the collective *and* restricted the flow of any liquid through the relief tube. I was able to convey this vital information to the co-pilot by screaming at the top of my lungs and pointing at the problem area with my nose. He quickly and forcibly dislodged the hose, made the appropriate power adjustments with the collective and arrested our descent, 600 feet below our assigned altitude.

Shaken, but not dampened, I finished my business as the co-pilot flew the aircraft back to the proper altitude.

While this incident may be so isolated in nature that it doesn't warrant a change to the HH-3F's emergency procedures, it does serve to illustrate how you can have your hands full with something more than a cyclic and collective. Then again, maybe the engineers could fashion an ICS button on the relief tube cup. ◄

Ltjg. Strother is currently stationed at Coast Guard Air Station San Diego as an HH-3F pilot. A former Army aviator, he has flown the Cobra, the Huey and the Cayuse.

I had spent five years flying around strapped to a parachute, yet I felt I wasn't adequately trained to use it. I wanted to find out for myself one way or another by

Jumping Out of a Perfectly Good Airplane

By Lt. John Flynn

THERE'S this commander I know who used to fly tactical jets. He's logged thousands of hours, hundreds of traps and seen a fair amount of combat. He is known as a hacker, a player — guy who's been there. Civilians would say he has "the right stuff."

These days he flies parachute jump planes in his spare time for a local parachute club. This keeps him in beer money and gets him some free flight time. The club has made a standing offer to teach him to jump, but he says, "No way." I asked him why. He looked me straight in the eye and said very seriously, "John, you *never* want to jump out of a perfectly good airplane. Those people are *crazy*."

This is a typical aviator's view of parachuting. It is an emergency unto itself, a last ditch manuever preferable only to immediate impending death, and even then not by much. It was with this basic orientation that I reported to the Navy's Basic Parachutist Course. All parachutists are volunteers, so why was I there? Well, I had just spent five years flying around strapped to a parachute, yet I had never felt I was adequately trained to use it. I wanted to find out for myself, one way or another.

Like any good military experience, jump school begins with a physical fitness test, requiring five pullups, 25 pushups, 30 situps and a 1.5-mile run which must be done in less than 12 minutes. This is hardly an Olympic trial, but it does ensure that each prospective jumper is in good enough shape to get through the program. Unlike the Navy-wide physical fitness test, the standards are the same regardless of age or sex. If you fail the test, you're immediately dropped from the program, and there are no waivers. This emphasis on fitness continues with daily workouts at 0700 except on jump days.

After the workouts come parachute landing falls. The PLF, as it is commonly known, is a rolling fall unique to parachuting. It is designed to dissipate both the horizontal and vertical forces present in an actual parachute landing. We practiced PLFs for about an hour each day, jumping from a 5-foot platform into a pea gravel pit which "cushions" your fall. The idea is to get you where you can do good PLFs in your sleep. It worked. After a week, some members of my class complained that they were dreaming of them at night. But we had no landing injuries later on.

Next we settled down in the classroom, where we learned parachute history, aerodynamics, local course rules as well as normal and emergency procedures.

Finally, we were introduced to the most time-consuming portion of the course: parachute packing. After watching an experienced rigger pack one parachute in record time, we set about packing the very chutes we would be jumping with. Needless to say, no one slept through the demonstration. The idea was not to make parachute riggers out of us, but to teach us the nuts and bolts of our equipment. It taught me a lot about *why* and *how* parachutes do what they do. It built my confidence and it gave me a deep appreciation of the rigger's profession.

Right: Instructor PR2 Thibos performs a final check on the author's parachute.

Below: The author sprints to outrun his canopy in a 7-knot wind after landing. If the jumper can run ahead of the canopy, it will collapse. If not, it can pull him off his feet and drag him.

Photos by MMC(DV) David L. Green.

The jump aircraft was a C-1A, modified for parachute operations. It had no door and no passenger seats. It could haul up to eight jumpers along with two jumpmasters and the aircrew. We jumped at 2,000 feet at 100 knots. At that altitude, we had about 1½ minutes in the chute, giving us time to practice canopy control and to get set up properly for landing. It also allowed enough time for an inexperienced jumper to recognize a high-speed parachute malfunction and get his reserve deployed.

The experience was overwhelming. Regardless of the fact that I knew I was prepared and that parachuting is basically a safe evolution, I felt an incredibly strong, primal fear of the

I felt splattered, like I had broken every major bone in my body.

2,000-foot drop. Every system in my body went to general quarters and stayed there until it was over. I don't even remember my first jump in any detail. Everything from the takeoff to the PLF was completely blocked from my memory by the stress. One of the instructors said this is typical. In the debrief he asked people to describe their first jump. One guy in particular had tumbled rather violently on exit, and wound up with twisted risers which he immediately untangled just as we had been taught. He didn't remember having any problems at all.

My biggest problem was landings. Watching a parachutist land, the experience looks almost serene; poetry in motion. To practice parachute landings is a bit akward at first, but no problem when you get used to it. But when I actually landed the first time, I felt splattered, like I had broken every major bone in my body. I hurt in so many places that I knew instinctively that only immediate, expert medical attention would save my life and that I would spend the rest of my days in traction, hooked up to machines. This feeling lasted for an eternal two seconds. Then I got up, field packed my chute and ran for the waiting stake truck which would take me back to do it again.

It took me three or four jumps to get the landings right, after which I discovered they can actually be done quite comfortably. Just like they tell you, it's all a matter of proper setup, correct body position and good form in the PLF. But remembering that from training and being able to do it automatically are a long way apart. This was true of a lot of what I learned.

In retrospect, I'm sure I was *told* the minimum I needed to know about parachuting when I went through flight training. But after jump training, what I thought I knew seems a gross oversimplification. Even worse, it was rote knowledge not backed by experience. For instance, I remember being taught in flight training to steer the canopy into the wind. Well, that's much better than landing downwind and it's easy to remember. But if you land exactly into the wind, a good PLF is impossible. If there is a lot of wind, you will probably hit hard on your tail bone, possibly injuring your back. The better technique is to set-up three-quarters into the wind.* I not only know that intellectually now, but I know it instinctively through pain. I don't think I will forget it if I ever eject, even if it happens years from now.

That was just one of many examples of where the difference between a simple lecture and actual experience was significant. But just as important is the effect that jump training has on the stress level. As I mentioned, a lot of people are so spaced out on their first jump they don't remember it. They do their procedures correctly *only* because they have been drilled to. On the later jumps, most people can "relax" and think about what's going on. So if I ever have to use a parachute, I should be much farther ahead of the stress curve. Fear of parachuting will be less likely to make me hesitate, and possibly eject too late. The shock should not cause me to freeze up and not follow the procedures.

Probably I would have done just fine during an ejection if I had not been through jump school. And now that I have been through it I still have no guarantee that I will survive if I eject. But I feel a lot more confident and better prepared now, and I recommend the training to anyone who wears a parachute for a living.

*The Safety Center does not recommend this technique for untrained jumpers.

Lt. Flynn is the editor of Approach. He is an A-6 B/N, formerly with VA-65 on the *Eisenhower*.

The Navy's jump course is taught by Naval Air Technical Training Center (NATTC), a tenant command of Naval Air Engineering Center, Lakehurst. The course is part of NATTC's Aviation Survival Equipment School which also teaches basic and advanced parachute riggers (Aviation Survival Equipmentman "A" and "C" schools) as well as advanced parachuting. It is often confused with the Army's jump school at Ft. Benning, Ga., especially because all the services use both schools. The basic difference is that the Navy's school is more often used to train small unit jumpers such as parachute test, para-rescue, medical, explosive ordnance disposal and special warfare personnel. The Army's school is more geared toward large unit jumpers, such as airborne infantry.

The Navy's basic jump course is scheduled to be three weeks in length, including one week of ground school and five static-line jumps. The jumps are often completed in only two days, but two weeks are scheduled to allow for tight weather restrictions and for aircraft availability.

For more information, call Autovon 624-2420/2687.

Bravo Zulu to Capt. Dale Brown, BMCM Dave Sutherland, Gy. Sgt. Richard Hiatt (USMC), PR1 Dave Hunter, PR1 Terry Murphy, PR1 Anne Mooney, PR2 Robert Thibos and the rest of the NATTC staff, for assistance in preparing this article, and more importantly keeping the Approach editor in one piece.

A Hair-Raising Experience

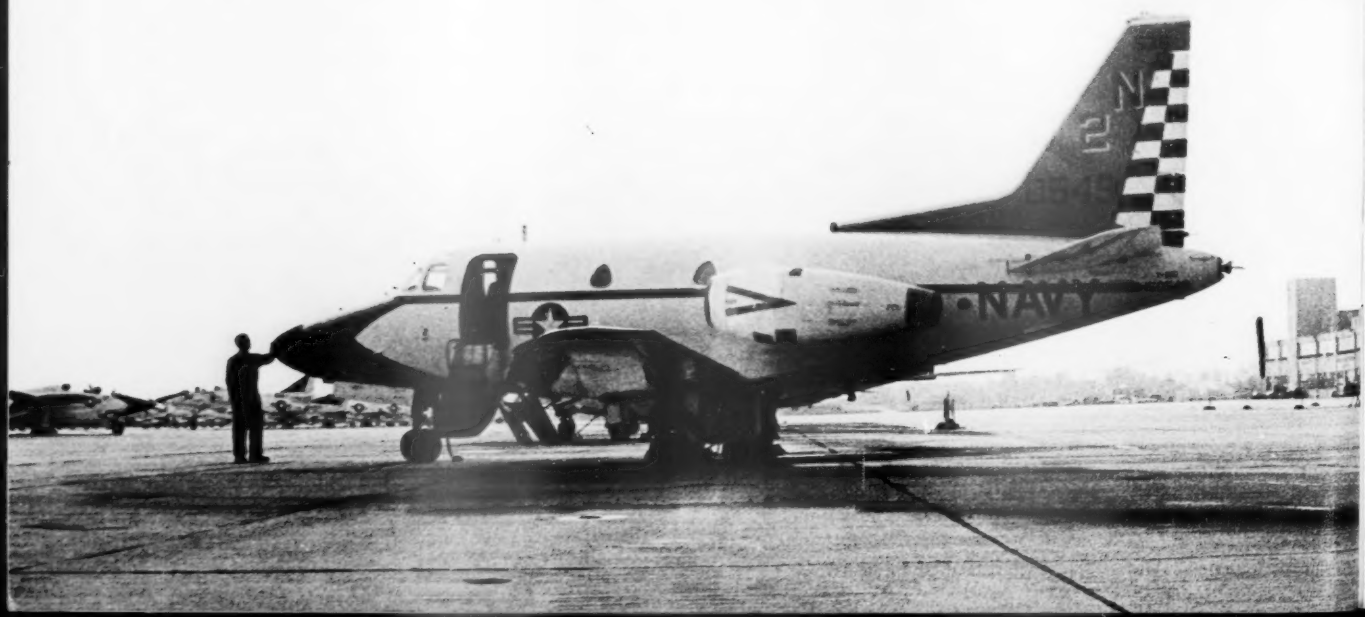
By Lt. Col. Louis B. Stefan, USMCR

IT was the second consecutive morning that I had flown down to MCAS(H) East Coast from NAF East Coast. The weather at our destination was not uncommon for fall, with fog burning off between 0800 and 0900 in the morning. The previous day we had received a good GCA approach to the runway in use and made an uneventful landing after breaking out around 150 feet AGL with two miles of forward visibility. This particular morning was almost a repeat of the preceding, except the ceiling was up around 400 feet AGL while the visibility was down slightly to about a mile and a half. As we commenced our letdown the second day, it became apparent that we would be executing a TACAN approach to the runway in use since the terminal radar was reported out of service. With the weather reported as earlier noted and with a minimum descent altitude of 360 feet AGL on this approach, it was "No sweat, GI!" Once again we flew the approach and made an uneventful landing. The only complaint that I had was the instrument approach lighting system had not been turned on. I felt that was carrying energy conservation a bit too far.

Since I fly transport category airplanes for a living in my civilian job, I have developed a bona fide appreciation for the precision approach as a tool of both passenger comfort and safety. It obviously provides a more stable approach which can be critical in low IFR conditions. After flying the TACAN approach just mentioned with much of the last three miles at just 360 feet AGL, the safety aspect of the precision approach was reinforced in my mind even more. In fact, in the civilian world of air transportation, I have rarely seen the non-precision approach used except in VFR conditions.

As we taxied up to the ramp to deplane our passengers, I saw another C-12 and a T-39 already parked there. They had preceded us by 15 and 20 minutes, respectively, under weather conditions that were slightly lower than those we encountered. With my curiosity piqued, I entered the airfield operations building where the T-39 pilots stood chatting. The first words out of my mouth were an inquiry into the type of approach they had received upon their arrival. Obviously I touched a sensitive nerve, as they proceeded to relate the tale of their PAR approach. It turned out that they were given a GCA approach by a *student final controller* in low IFR conditions. Only the favorite expression of the revered New York Yankee broadcaster, Phil Rizzuto, seemed appropriate – "Holy cow!" I settled in to listen to the details of their story.

The first instructions issued to the T-39 while on final approach and already on a heading of *060°* was to turn *left* to *063°*. After several more conflicting instructions,



one can easily imagine the confusion that existed on both ends of this scenario as the aircraft veered farther away from centerline while the pilot was trying to decipher ATC's commands. The controller's eventual solution was to initiate a no-gyro approach. Now I ask you, who is about to surrender the single most important thing he has working for him under the conditions just described when he knows it is working properly? Net result — more confusion in an already destabilized situation! Potential for disaster? You bet!

My personal solution to the above dramatics would be to install an ILS to the runway in question, which would place the onus squarely where it belongs — on the shoulders of the pilot and simultaneously reduce the human error potential by 50 percent. Let's talk about reality and what actually can be done. First, under no circumstances should anyone but a fully qualified controller ever be allowed to initiate a GCA approach in IFR conditions much less in low IFR conditions. Second, if a student is going to control an approach in the situation just chronicled, the ATC supervisor should be looking right over that student's shoulder. There are a multitude of novices in all segments of our nationwide en route and terminal radar systems today. But in every instance that I have ever received erroneous instructions from a student controller, a journeyman has been standing by to immediately volunteer the correct information. This was clearly not the case in this incident.

No story is complete without input from the other half of the equation, so I asked the T-39 pilots to please step into airfield operations with me since I felt there was much to be garnered from their experience. The ATC officer was already there and proceeded to explain that this was the only chance student controllers had to accrue experience in actual IFR conditions. I personally do not believe he would subscribe to that practice if he had ever experienced an actual IFR approach from the vantage point of the cockpit. The FAA has a familiarization program for its controllers that allows them to ride the jump seat on commercial airliners. It provides an excellent forum for understanding problems of mutual concern. While this may not be feasible for all types of military aircraft, certainly it could be done in many of our transport category flying machines.

The ATC officer also stated that his controllers were not receiving enough experience dealing with fixed wing aircraft (in VFR *or* IFR conditions). After listening to that statement, I realized that I too was part of the problem, because of the numerous times that I declined PAR approaches into this station in visual conditions in order to expedite my operation. In the future, I plan on using their radar facilities, regardless of the weather conditions upon my arrival. I also suggested that they encourage their H-53 squadrons to fly some 120- to 130-knot GCAs to a low or missed approach in order to simulate a fixed wing aircraft operation. Since experience in controlling aircraft, like every other facet of life, comes from practice, practice and more practice, it is incumbent on us as pilots to help provide the tools our brethren on the scopes need to gain proficiency. Otherwise, we will continue to hear more and endless variations of this "hair-raising experience."

More importantly, though, remember: The pilot in command always has final authority on factors affecting his flight. Refusing a GCA approach from a student final controller in actual IFR conditions is always an option.◄

Although lengthy, this is an excellent article for pilots and controllers that addresses our area which is potentially dangerous . . . About three years ago, we had two controllers court-martialed for a similar situation. The following info is provided for editorial comment.

OPNAVINST 3721.1K, which provides administrative and operational procedures for operation of Navy and Marine Corps air traffic control facilities worldwide, states:

"When assigned to operating positions, trainees shall be under the direct and constant supervision of a controller qualified on the position concerned. The qualified controller shall utilize the same radio console as the trainee unless override capability exists from an adjacent console to ensure instantaneous radio communications with the aircraft by the qualified controller.

"Except as noted below, trainees shall not be assigned to final controller positions (precision, surveillance or ACLS) under prevailing weather conditions below 1,000 feet or three miles. With approval of branch managers, trainees nearing qualification or who have achieved a prior final controller rating may be authorized to control aircraft conducting radar approaches under weather conditions not less than the lowest circling minima established for the airfield and category of aircraft involved."

In my opinion, these procedures allow the trainee to safely and realistically transition from controlling aircraft in VFR to actual IFR conditioning as he approaches qualification for the final controller position. Lt. Col. Stefan's article accurately points out another problem that I have observed at many Navy/Marine Corps air stations: the lack of real-time GCA practice for radar controllers. This includes emergency approaches in the traffic pattern.

ACCM F.M. McGee
Naval Safety Center

Lt. Col. Stefan is captain on the Boeing 737 aircraft for People Express Airlines. As a reservist, he concurrently flies the UC-12B in support of Headquarters Marine Corps. Prior to coming to the Marine Air Support Detachment at NAF Washington, he was the operations officer of HMH-772 at NAS Willow Grove. About a third of his 10,000 hours of hands-on flying experience has been in helicopters, including the CH-34, the CH-46 and the CH-53.

LETTERS

Re: Not-So-Trivial Pursuit (Jan '85)

Pearl Harbor, Hawaii — Every maintenance manager should prominently post "Not-So-Trivial Pursuit" to their activity's *mandatory reading* bulletin board and incorporate it in their FOD prevention training program. Recommend the following thoughts be appended:

Take the time to read this article and everywhere you see the word "squadron," add the words "AIMD" and "NARF."

Think FOD continually. It doesn't go away because flight ops are over or you've RFI'd that component or it's the weekend or an in-port period.

Cdr. Louise Huegel
Aviation Material Readiness Staff
CINCPACFLT

Re: "Thank God They Don't Fly Like They Drive!" (Jan '85)

Annapolis, MD — "Italian Air Group shares U.S. Navy Base?" On the contrary! U.S. Naval Air Station Sigonella is a tenant command of the NATO Maritime Airfield, commanded by a NATO officer of the Italian Air Force.

Remembering that wherever we serve overseas (in peace), we as guests of our host may help make our tour a bit easier. It may even make our operations more safe. As Lt. Holland pointed out: ICAO and FAA procedures differ ("Letters," same issue).

Lt. J.P. Gleason
U.S. Naval Academy

Re: "Think" Training, Dr. Richard K. Brown, Approach, (Feb '85)

Beeville, Texas — I would like to address the inappropriateness of Dr. Brown's reference article as it may relate to military publications.

Had Dr. Brown *not* referred to Dr. Karl Albrecht, or had Dr. Albrecht not quoted Bernard Shaw, whom I assume to be *the* George Benard Shaw, 1856-1950, British author and socialist, the article would have been not only enlightening and relevant, but also appropriate.

In a way of explanation, let me quote a reference by Zygmund Dobbs, *Economic Deception as a Political Credo*, Probe Publishers, that provides ample reason to omit any reference to or aggrandizement of Bernard Shaw in military publications. "Bernard Shaw . . . He was himself a most bizarre deviate. He insisted on watching the cremation of his mother behind the scenes so he could enjoy the sight of the flames consuming her body. A witness reported that Shaw had a 'look of ecstasy as the coffin burst into twirling rhythms of soaring flames.' He left the crematorium happily humming a tune and immediately went to a gay weekend party given by the Sidney Webbs. He attended many cremations and definitely got a sexual thrill from watching burning of bodies." (Stephen Winsten, *Jesting Apostle, The Private Life of Bernard Shaw*, E.P. Dutton, New York, 1957 pp 151, 166, 201.)

Shaw, in his book, "Everybody's Political What's What," Dodd Meade Co., 1944, New York, pp 177, 283, comments on "the liquidation of young insurgents against 'affluence' " in his socialistic scheme of things.

There is much much more to be revealed on this deviate's, "international reputation for thinking once or twice a week," as quoted by Dr. Albrecht.

There must be more honorable persons to quote in military journals than Bernard Shaw!

Weldon R. Mitchell

• **Probe publishers? — Ed.**

Re: Those Dangerous Flying Chairs (March '85)

Barksdale Air Force Base, La. — Your article on ultralights by Peter Mersky was interesting and timely. We in the Air Force have also been plagued by these "aluminum mosquitoes" intruding in areas where they create a significant hazard. Your reference to FAR Part 103 certainly helped clarify what these obnoxious things can legally do.

The reference to FAR Part 135 is somewhat misleading. The article states "normal powered flight is covered in the FARs Paragraphs 135.244-247, which detail licensing experience and currency requirements." Part 135 concerns "Air Taxi Operators and Commercial Operators." The requirements for "normal powered flight" are contained in Part 61 — Certification: Pilots and Flight Instructors. While "currency" requirements (135.247/61.57) are the same for both Part 135 and 61, "licensing" and experience requirements are significantly different. FAR 135.244 requires specific minimum hours of experience in make and model to serve as pilot in command. Also, 135.243 requires the pilot in command to have a minimum of 500 hours pilot time. Part 61 specifies no minimum experience in make and model to serve as pilot in command. The minimum "license" or pilot certificate required for a powered aircraft pilot is the private pilot certificate (Part 61, Subpart D). FAR 135-243 requires the pilot in command to have at least a commercial pilot certificate. The basic "Sunday flier" needs to comply with significantly less stringent regulations than FAR 135.244-247.

We at Eighth Air Force Flying Safety eagerly read your magazine each month and laud your efforts toward minimizing the hazards presently caused by ultralights. We get many good ideas and information from your magazine. Fly Safe!

Capt. Joseph K. Costello, USAF
Flying Safety Officer
Directorate of Safety
Headquarters Eighth Air Force (SAC)

Aero Club Safety Newsletter

NAS Willow Grove, Pa. — As a long-time member of the military aero club community, I have been conscious of the sometimes precarious relationship between the "civilian" pilots and the host naval or Marine Corps air stations where aero clubs exist. It is a privilege to be able to operate an aero club aboard the local NAS or MCAS, and that privilege should be maintained through safety awareness and adherence to local operational procedure. Many of us ("civilian" pilots) would be grounded if not for the availability of a military aero club at our installations.

Unfortunately, when it comes to safety awareness, there is no "Approach" type of magazine for the aero clubs to use to support their safety programs. To be sure, Approach is available to most aero club pilots, but it is usually oriented to NAVAIR ops and discusses precious little where matters of general aviation are concerned. While basic safety is applicable to all flight operations, whether it is a Cessna 152 or the space shuttle, it is difficult to draw parallels where procedures are involved.

I would, therefore, like to solicit responses from any and all Navy or Marine Corps aero clubs, or any other interested party, to determine the need or interest in establishing a service-wide aero club newsletter, with stresses on safety and procedures. Included might be recreational items, news items from other clubs, activities, etc. I think that if there is a forum for aero club pilots to discuss their peculiar type of flying and safety topics, an all-around safer environment will exist around our air stations.

I will gladly accept letters at the address below, or at Autovon 991-6759 or 6733 from 1200Z to 2100Z. I hope to hear from all USN/USMC aero clubs, as well as USAF, USA, USCG, USCGAUX and USAFAUX (CAP) clubs/flight activities.

Staff Sgt. Steven J. Robeson, USMC
Marine Aircraft Group 49
4th Marine Aircraft Wing
NAS Willow Grove, Pa. 19090-5030

IF YOU SEE A FLIGHT SAFETY PROBLEM

DON'T IGNORE IT

CHECK IT OUT MORE CLOSELY

Poster prepared by CGP(N) Air Section, Royal Navy Flight Safety Center

A picture is worth a thousand words.

Ever wonder
what an oil derrick looks like
from a P-3C cockpit
flying an offset approach
at 400 feet?

Yes, there <u>are</u> rocks in clouds.

Naval Safety Center
NAS Norfolk, Virginia

Poster idea contributed by VP-24